Transgender Health
Volume 8, Number 2, 2023
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DOI: 10.1089/trgh.2021.0069

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ORIGINAL ARTICLE

Gender-Affirming Hormone Therapy for the Trans, Gender Diverse, and Nonbinary Community: Coordinating World Professional Association for Transgender Health and Informed Consent Models of Care

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Abstract

Purpose: Before commencing gender-affirming hormone therapy, people undergo assessments through the World Professional Association for Transgender Health (WPATH) model (typically with a mental health clinician), or an informed consent (IC) model (without a formal mental health assessment). Despite growing demand, these remain poorly coordinated in Australia. We aimed to compare clients attending WPATH and IC services; compare binary and nonbinary clients; and characterize clients with psychiatric diagnoses or longer assessments.

Methods: Cross-sectional audit of clients approved for gender-affirming treatment (March 2017–2019) at a specialist clinic (WPATH model, $n = 212$) or a primary care clinic (IC model, $n = 265$). Sociodemographic, mental health, and clinical data were collected from electronic records, and analyzed with pairwise comparisons and multivariable regression.

Results: WPATH model clients had more psychiatric diagnoses (mean 1.4 vs. 1.1, $p < 0.001$) and longer assessments for hormones (median 5 vs. 2 sessions, $p < 0.001$) than IC model clients. More IC model clients than WPATH model clients were nonbinary (27% vs. 15%, $p = 0.016$). Nonbinary clients had more psychiatric diagnoses (mean 1.7 vs. 1.1, $p < 0.001$) and longer IC assessments (median 3 vs. 2 sessions, $p < 0.001$) than binary clients. Total psychiatric diagnoses were associated with nonbinary identities (β 0.7, $p = 0.001$) and health care cards (β 0.4, $p = 0.017$); depression diagnoses were associated with regional/remote residence (adjusted odds ratio [aOR] 2.2, $p = 0.011$); and anxiety disorders were associated with nonbinary identities (aOR 2.8, $p = 0.012$) and inversely associated with employment (aOR 0.5, $p = 0.016$).

Conclusion: WPATH model clients are more likely to have binary identities, mental health diagnoses, and longer assessments than IC model clients. Better coordination is needed to ensure timely gender-affirming care.

Keywords: gender-affirming hormone therapy; informed consent model; nonbinary; transgender; WPATH model

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Introduction

Trans, gender diverse, and nonbinary (TGDNB) people* have a gender identity differing from their birth-assigned sex, comprising ~0.5% of the global population.[1] Many TGDNB people desire gender-affirming treatment, through a gender assessment in the traditional World Professional Association for Transgender Health (WPATH) model typically offered by mental health clinicians,[2] or newer informed consent (IC) models offered by primary care physicians (PCPs), sexual health physicians, endocrinologists, and gynecologists.[3] Demand for gender-affirming health care is increasing rapidly,[4] creating a need to effectively coordinate the two models.[5]

Gender-affirming treatment includes hormone therapy (HT), gender-affirming surgeries, and other therapies such as voice training.[6] In the WPATH model, therapies are usually approved by a mental health clinician if the client meets all eligibility criteria, including "well-controlled" mental health.[2] This model has been criticized for its paternalistic gatekeeping,[7] inaccessibility for those residing in regional/remote areas,[3] and the paucity of trained clinicians offering this model.[2]

In response, IC models have arisen for provision of HT, whereby an experienced medical practitioner conducts an assessment focusing on the client's ability to understand risks and benefits of HT and provide IC.[3,8] IC models are more accessible, and overwhelmingly preferred by TGDNB people in Australia.[5] However, to our knowledge, no empirical studies have compared outcomes in WPATH and IC models of care.

Nonbinary people may face more barriers to care and have poorer mental health than binary transgender people.[9,10] While fewer nonbinary people desire HT,[10,11] those who do often have distinct preferences, such as HT in smaller doses (for which guidelines are still emerging).[12] Although the WPATH model has been historically unwelcoming for nonbinary people (whose identities may not be seen to "justify" treatment),[13,14] few studies have investigated nonbinary clients in the WPATH model.[15,16]

Another key TGDNB subpopulation are those seeking gender-affirming treatment who have "complex health needs." While poorly defined, this term attempts to describe the relationship between a client's sociodemographic characteristics, mental health, and other factors that may lengthen assessments.[5,6,17,18] Since they often have greater mental health needs,[19] a better understanding of this subpopulation could help identify TGDNB people who may be best served by mental health clinicians in the WPATH model.[5]

In Victoria, Australia, determining clients' suitability for each model is not coordinated.[5] Despite the need to improve coordination, no study worldwide has empirically compared WPATH and IC models' clients and assessments. To fill this gap, this study investigated utilization patterns across the two models by

(1) comparing WPATH and IC model clients in terms of sociodemographic, mental health, and clinical variables;
(2) comparing binary and nonbinary clients (across both models) in terms of sociodemographic, mental health, and clinical variables; and
(3) identifying factors associated with (a) psychiatric diagnoses; or (b) longer assessments for HT.

We hypothesized poorer mental health and longer assessments for clients in the WPATH model, given it more comprehensively assesses mental health[2]; poorer mental health among nonbinary clients, given recent findings[10]; and more psychiatric diagnoses and longer assessments among those facing socioeconomic disadvantage.

Materials and Methods

We performed a cross-sectional audit of electronic health records of clients approved for gender-affirming treatment at two clinics in Victoria, Australia. Being subsidized by the Australian Government's Medicare scheme, both clinics feature no out-of-pocket costs to clients. Equinox Gender Diverse Health Centre is a specialized, peer-led TGDNB primary care clinic located in metropolitan Melbourne and operated by Thorne Harbour Health. In 2017, Equinox created Australia's first IC guideline (which was endorsed by the Australian Professional Association for Trans Health),[20,21] in which clients that demonstrate complexity that is beyond the PCP's capacity to ascertain if the client can provide IC are referred for further assessment in the WPATH model.[20]

In contrast, Monash Health Gender Clinic (MHGC) is located in suburban Victoria, and is the only

*TGDNB people have a gender identity differing from their birth-assigned sex. This may be a binary identity, that is, masculine (male, trans man, or transmasculine) or feminine (female, trans woman, or transfeminine) identities, or a non-binary identity that exists between, outside, or beyond the gender binary (e.g., genderqueer). We use the term TGDNB as it has been approved by the consumer advisory panel of Monash Health Gender Clinic. Gender identity may change over time, but for research purposes, we measure self-expressed gender identity at the time of assessment only.

statewide service in Victoria's public mental health system that uses the WPATH model.[5,18] Rather than assessing every single TGDNB individual (which is not feasible with MHGC's significant waitlist), MHGC is increasingly supporting PCPs with complex cases only.[18]

All clients with a first appointment between March 1, 2017 and March 31, 2019 with a completed assessment by June 1, 2020 were included. To avoid repeated entries, clients who reinitiated care for another assessment at the same clinic ($n=2$) only had their first assessment included. At MHGC, clinicians recorded data through surveys on REDCap, a secure web-based platform.[22] Eligible clients' data were exported to a deidentified dataset, with investigators inputting missing data from electronic health records. Equinox data had already been collected from electronic health records by Spanos et al.[8]; since this dataset was deidentified, missing variables could not be added.

This study was approved by Monash Health's Human Research Ethics Committee (RES-19-0000929L-59934), Monash University's Human Research Ethics Committee (Project 23196), and consumer advisory panels of MHGC and Thorne Harbour Health.

Sociodemographic variables included age; birth-assigned sex; gender identity; postcode; private health insurance; health care card ownership (indicating those deemed by the government as having increased socioeconomic need, who can access medicines at subsidized rates)[23]; employment status; government payment status; legal and social relationship status; living situation; and smoking status. All were binary/categorical variables except for age. Postcodes were stratified into geographical remoteness using the Australian Statistical Geography Standard Remoteness Structure 2016.[24]

Clients were categorized into three self-expressed gender identity clusters (following the previous literature)[25]: trans man (male, man, trans man, or transmasculine); trans woman (female, woman, trans woman, or transfeminine); or nonbinary (all other labels). Per previous literature,[26] a nonbinary identity was prioritized when expressed alongside a binary label (e.g., "transmasculine agender" was classified as nonbinary).

Mental health variables included psychiatric diagnoses and psychotropic medications (free text); these were converted to categorical format (discarding diagnoses or medications that were inactive at the time of assessment), and clients' number of diagnoses and medications were recorded.

Clinical variables included the number of sessions taken to complete assessments (defined as reaching the main goal of the assessment, e.g., approval for HT), and whether nonprescribed hormone use was disclosed.

Statistical analysis

Discrete variables are reported as count and percentage, and continuous variables as median and interquartile range or (where groups differ but have equivalent medians) mean and standard deviation. Continuous variables were confirmed as nonparametric using the Shapiro–Wilk test. Differences between groups were examined with the chi-square test, Fisher's exact test, or Mann–Whitney U test as appropriate, with missing data points excluded from calculations.

To prevent false positives among the many comparisons conducted between clinics and between binary and nonbinary clients, the Benjamini–Hochberg *post hoc* adjustment (which lowers p-values required for statistical significance)[27] was applied separately to sociodemographic comparisons and mental health comparisons conducted between groups.

To identify associations with psychiatric diagnoses or assessment length, linear and logistic multivariable regression was conducted on MHGC clients (Equinox clients had insufficient sociodemographic variables to be included in this analysis). We used a backward stepwise approach, where all potentially relevant sociodemographic variables were included as predictors: age, birth-assigned sex, nonbinary identity, private health insurance, health care card, single on social relationship status, employment, and regional/remote residence.

For the model investigating the number of sessions taken to complete assessments, the number of psychiatric diagnoses and the number of psychotropic medications used were also included as predictors. The model was rerun iteratively, with the predictor variable with the highest p-value removed from the subsequent iteration until all $p<0.4$ (a value with demonstrated good performance).[28] To investigate psychiatric diagnoses, three models were constructed: the number of psychiatric diagnoses; having a depression diagnosis; and having an anxiety disorder diagnosis.

Analyses were performed on R (version 3.6.1) using tidyverse packages, with $p<0.05$ as the default threshold for statistical significance.

Results

Our total sample of $n=477$ included 265 Equinox clients approved for HT; 123 MHGC clients approved

Table 1. Sociodemographic Variables of Monash Health Gender Clinic and Equinox Clients

	Equinox clients approved for HT (n=265)	MHGC clients approved for HT (n=123)	p-value (Equinox vs. MHGC clients approved for HT)	All MHGC clients[b] (n=212)	p-value (Equinox vs. all MHGC clients)
Age	23.8 [20.2, 28.1]	22.5 [19.5, 32.3]	W=14786, p=0.329	23.1 [19.8, 33.1]	W=27794, p=0.803
AFAB	127 (48.5%)	51 (41.5%)	$\chi^2(1)=1.4$, $p=0.239$	99 (46.7%)	$\chi^2(1)=0.1$, $p=0.790$
Gender identity	Binary: 186 (73.5%) Trans woman: 110 (43.5%) Trans man: 76 (30.0%) Nonbinary: 67 (26.5%) AFAB: 48 (19.0%) AMAB: 19 (7.5%)	Binary: 104 (85.2%) Trans woman: 60 (49.2%) Trans man: 44 (36.1%) Nonbinary: 18 (14.8%) AFAB: 8 (6.6%) AMAB: 10 (8.2%)	Nonbinary: $\chi^2(1)=5.8$, $p=0.016$[a]	Binary: 171 (81.0%) Trans woman: 101 (47.9%) Trans man: 70 (33.2%) Nonbinary: 40 (19.0%) AFAB: 30 (14.2%) AMAB: 10 (4.7%)	Nonbinary: $\chi^2(1)=2.8$, $p=0.095$
Geographical remoteness[c]	Major city: 234 (88.3%) Regional/remote: 31 (11.7%) RA2: 29 (10.9%) RA3: 2 (0.8%)	Major city: 65 (63.7%) Regional/remote: 37 (36.3%) RA2: 33 (32.4%) RA3: 3 (2.9%) RA4: 1 (1.0%)	Major city: $\chi^2(1)=27.9$, $p<0.001$[a]	Major city: 119 (64.3%) Regional/remote: 66 (35.7%) RA2: 56 (30.3%) RA3: 9 (4.9%) RA4: 1 (0.5%)	Major city: $\chi^2(1)=37.0$, $p<0.001$[a]
Private health insurance	ND	33 (27.7%)	—	70 (33.0%)	—
Health care card	ND	48 (48.5%)	—	89 (51.4%)	—
Source of income[d]	ND	Employed: 57 (48.3%) Full-time: 21 (17.8%) Part-time: 26 (22.0%) Casual: 10 (8.5%) Government payments: 39 (33.1%) Youth allowance: 24 (20.3%) Disability pension: 15 (12.7%) Other: 24 (20.3%) Dependent on family/partner: 20 (16.9%) Unemployed: 4 (3.4%)	—	Employed: 94 (46.8%) Full-time: 33 (16.4%) Part-time: 39 (19.4%) Casual: 22 (11.0%) Government payments: 75 (37.3%) Youth allowance: 39 (19.4%) Disability pension: 35 (17.4%) Aged pension: 2 (1.0%) Other: 36 (17.9%) Dependent on family/partner: 27 (13.4%) Unemployed: 9 (4.5%)	—
Legal relationship status	ND	Single: 104 (84.6%) Married: 8 (6.5%) Previously legally partnered[e]: 11 (8.9%)	—	Single: 178 (85.2%) Married: 10 (4.8%) Previously legally partnered[e]: 21 (10.0%)	—
Social relationship status	ND	Single: 80 (66.7%) Dating (not long term): 7 (5.8%) In a relationship: 33 (27.5%) Long term: 24 (20.0%) De facto: 4 (3.3%) Long distance: 5 (4.2%)	—	Single: 134 (65.7%) Dating (not long term): 12 (5.9%) In a relationship: 70 (34.3%) Long term: 41 (20.1%) De facto: 8 (3.9%) Long distance: 8 (3.9%) Polyamorous: 1 (0.5%)	—

(*continued*)

Table 1. (Continued)

	Equinox clients approved for HT (n=265)	MHGC clients approved for HT (n=123)	p-value (Equinox vs. MHGC clients approved for HT)	All MHGC clients[b] (n=212)	p-value (Equinox vs. all MHGC clients)
Living situation	ND	Living alone: 9 (7.4%) Living with others: 106 (86.9%) Parent/s: 70 (57.4%) Partner: 17 (13.9%) Parent/s and partner: 2 (1.6%) Ex-partner: 1 (0.8%) Shared house: 13 (10.7%) University/college: 3 (2.5%) Other: 7 (5.7%) Supported accommodation: 4 (3.3%) Homeless: 2 (1.6%) Prison: 1 (0.8%)	—	Living alone: 23 (11.1%) Living with others: 170 (82.1%) Parent/s: 97 (46.9%) Partner: 28 (13.5%) Parent/s and partner: 2 (1.0%) Ex-partner: 1 (0.5%) Shared house: 38 (18.4%) University/college: 4 (1.9%) Other: 14 (6.8%) Supported accommodation: 10 (4.8%) Homeless: 3 (1.5%) Prison: 1 (0.5%)	—
Current smoking status	ND	Smoker: 19 (16.8%) Daily: 15 (13.3%) Intermittent: 4 (3.5%) Nonsmoker: 94 (83.2%)	—	Smoker: 35 (18.0%) Daily: 29 (14.9%) Intermittent: 6 (3.1%) Nonsmoker: 159 (82.0%)	—

Reported as median [IQR] or n (%).

[a]Statistically significant after the Benjamini–Hochberg *post hoc* adjustment.

[b]Inclusive of MHGC clients approved for other therapies, such as gender-affirming surgery (Supplementary Appendix SA1).

[c]Graded by postcode per the Australian Statistical Geography Standard Remoteness Structure 2016, in which RA1 is a major city, RA2 is an inner regional area, RA3 is an outer regional area, and RA4 is a remote area.

[d]Categories are not mutually exclusive (some clients had multiple answers).

[e]Includes those divorced, widowed, or separated.

AFAB, assigned female at birth; AMAB, assigned male at birth; HT, hormone therapy; IQR, interquartile range; MHGC, Monash Health Gender Clinic; ND, no data.

for HT; and 89 additional MHGC clients who were not approved for HT, but for other gender-affirming therapies such as surgery (further detailed in Supplementary Appendix SA1). Of the total sample, 357 (75%) had binary identities, 107 (22%) had nonbinary identities, and 13 (3%) did not specify a gender identity. Of 100 (47%) MHGC clients with an identified referral source, 12 were from Equinox; whether these were also included in the Equinox sample was unknown. There were 12 MHGC clients with assessments ongoing at June 1, 2020; these did not significantly differ from included MHGC clients in any variables.

Comparing WPATH and IC model clients

Sociodemographic variables of Equinox clients approved for HT, MHGC clients approved for HT, and all MHGC clients are shown in Table 1. A significantly greater proportion of Equinox than MHGC clients resided in a major city (88% vs. 64%, $p < 0.001$). Nonbinary individuals comprised a minority at both clinics (Fig. 1), with 78 (73%) assigned female at birth. Nonbinary people comprised a significantly greater proportion of clients approved for HT at Equinox than at MHGC (27% vs. 15%, $p = 0.016$).

Mental health variables of Equinox clients approved for HT, MHGC clients approved for HT, and all MHGC clients are shown in Table 2. MHGC clients were significantly more likely to have diagnoses of anxiety disorder, borderline personality disorder (BPD), or autism spectrum disorder, and use a greater number of psychotropic medications, antidepressants, or benzodiazepines than Equinox clients. Within anxiety disorder diagnoses, MHGC clients were significantly more likely to have a diagnosis of post-traumatic stress disorder than Equinox clients (7% vs. 3%, $\chi^2(1) = 5.1$, $p = 0.023$). All significant differences (except for BPD diagnoses) persisted when restricting the comparison with clients approved for HT.

The number of sessions taken to complete assessments for HT (Fig. 2) was significantly greater at MHGC than Equinox (median 5 [4, 7] vs. 2 [2, 3] sessions, $p < 0.001$). Nonprescribed hormone use was disclosed by 7 (2.6%) Equinox clients and 9 (6.5%) MHGC clients approved for HT (no significant difference).

Comparing binary and nonbinary clients

Across Equinox and MHGC, we compared binary and nonbinary clients' sociodemographic variables (Table 3) and mental health variables (Table 4). Nonbinary clients were found to have more psychiatric diagnoses (median 2 vs. 1 diagnoses, $p < 0.001$) and BPD diagnoses (16.2% vs. 6.2%, $p < 0.001$) than binary clients. Data are split into trans men and trans women in Supplementary Appendix SA2.

At MHGC, the number of sessions to complete assessments for HT did not significantly differ between trans men, trans women, and nonbinary clients (data not shown). At Equinox, the number of sessions taken to complete assessments (Fig. 3) was significantly greater for nonbinary than for binary clients (median 3 [2, 3] vs. 2 [2, 3] sessions, $p < 0.001$). Among clients approved for HT at either clinic, clients with binary identities were significantly more likely than nonbinary clients to be using nonprescribed hormones (5% vs. 0%, $p = 0.046$).

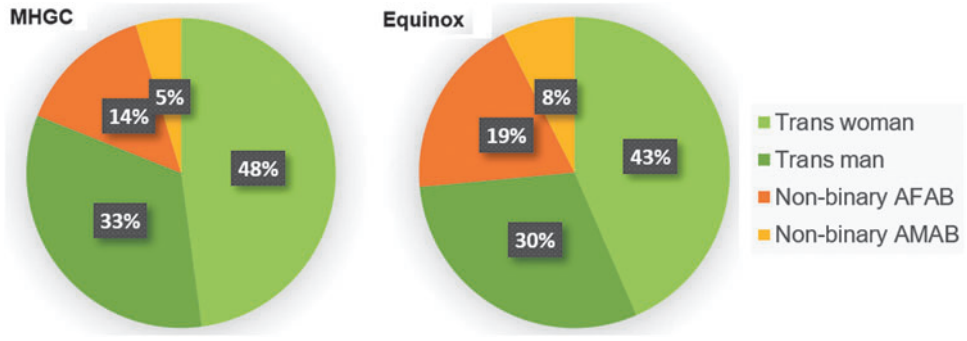

FIG. 1. Gender identities of MHGC and Equinox clients. Not shown are 12 Equinox clients and 1 MHGC client who did not articulate a gender identity. AFAB, assigned female at birth; AMAB, assigned male at birth; MHGC, Monash Health Gender Clinic.

Table 2. Mental Health Variables of Monash Health Gender Clinic and Equinox Clients

Mental health variable[d]	Equinox clients approved for HT (n=265)	MHGC clients approved for HT (n=123)	p-value (Equinox vs. MHGC clients approved for HT)	All MHGC clients[b] (n=212)	p-value (Equinox vs. all MHGC clients)
Number of psychiatric diagnoses	1 [0, 2] Mean: 1.1 (1.1)	1 [0, 2] Mean: 1.3 (1.1)	W=18529, p=0.013[a]	1 [1, 2] Mean: 1.4 (1.1)	W=32950, p<0.001[a]
Depression	109 (41.1%)	53 (43.1%)	$\chi^2(1)$=0.1, p=0.783	101 (47.6%)	$\chi^2(1)$=1.7, p=0.188
Anxiety disorder[c]	93 (35.5%)	58 (47.2%)	$\chi^2(1)$=4.8, p=0.029[a]	99 (46.7%)	$\chi^2(1)$=6.1, p=0.014[a]
Borderline personality disorder	13 (4.9%)	10 (8.1%)	$\chi^2(1)$=1.5, p=0.221	26 (12.3%)	$\chi^2(1)$=8.3, p=0.004[a]
Autism spectrum disorder	14 (5.3%)	16 (13.0%)	$\chi^2(1)$=6.9, p=0.009[a]	25 (11.8%)	$\chi^2(1)$=6.5, p=0.011[a]
Attention-deficit hyperactivity disorder	17 (6.4%)	8 (6.5%)	$\chi^2(1)$<0.1, p=0.988	12 (5.7%)	$\chi^2(1)$=0.1, p=0.716
Other psychiatric diagnosis[e]	13 (9.4%)	15 (12.2%)	Not compared	28 (13.2%)	Not compared
Number of psychotropic medications used	0 [0, 0] Mean: 0.23 (0.49)	0 [0, 1] Mean: 0.46 (0.64)	W=19351, p<0.001[a]	0 [0, 1] Mean: 0.56 (0.71)	W=38443, p<0.001[a]
Antidepressant	49 (18.5%)	44 (35.8%)	$\chi^2(1)$=13.8, p<0.001[a]	89 (42.0%)	$\chi^2(1)$=31.6, p<0.001[a]
Benzodiazepine	2 (0.8%)	7 (5.6%)	OR=7.9, p=0.006[a]	12 (5.7%)	$\chi^2(1)$=9.9, p=0.002[a]
Other psychotropic medications[e]	9 (3.4%)	4 (3.3%)	Not compared	17 (8.0%)	Not compared

Reported as median [IQR], mean (SD), or *n* (%).
[a]Statistically significant after the Benjamini–Hochberg *post hoc* adjustment.
[b]Inclusive of MHGC clients approved for other therapies, such as gender-affirming surgery (Supplementary Appendix SA1).
[c]Includes generalized anxiety disorder, social anxiety disorder, post-traumatic stress disorder, panic disorder, obsessive-compulsive disorder, and agoraphobia.
[d]Categories are not mutually exclusive (some clients had multiple answers).
[e]Diagnoses and medications included under "other" had a prevalence of <5% at both Equinox and MHGC.
OR, odds ratio; SD, standard deviation.

Factors associated with psychiatric diagnoses and longer assessments for HT

Among MHGC clients, the number of psychiatric diagnoses was independently associated with having a nonbinary identity (β=0.686, p=0.001) and owning a health care card (β=0.427, p=0.017; Table 5). This model violated assumptions of homoskedasticity and independence of errors, which may have falsely lowered p-values (Supplementary Appendix SA3). Regional/remote residence was independently associated with depression diagnoses (adjusted odds ratio [aOR] 2.229, p=0.011), while nonbinary identities (aOR 2.833, p=0.012) and employment (aOR 0.463, p=0.016) were independently associated with anxiety disorder diagnoses (Table 6). For the number of sessions for assessments for HT, no predictor variables remained in the model (data not shown).

Discussion

This is the first cross-sectional study comparing sociodemographic, mental health, and clinical characteristics of clients accessing gender-affirming hormones using

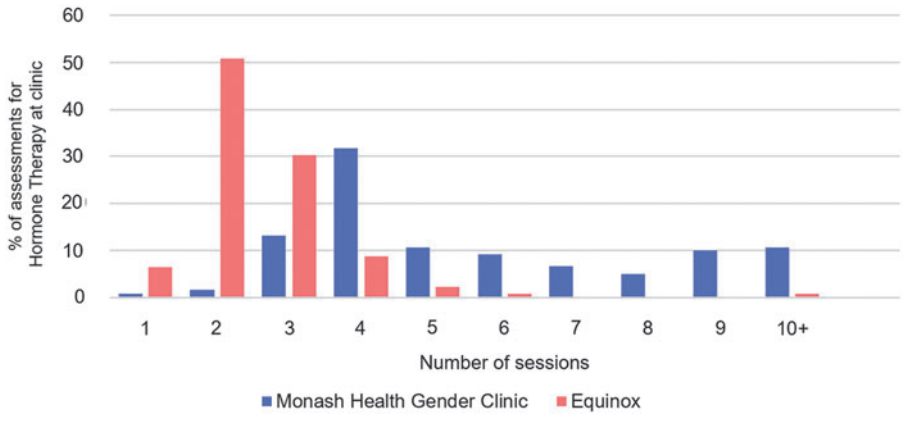

FIG. 2. Number of sessions taken to complete assessments for HT at MHGC and Equinox. The maximum number of sessions (at both clinics) was 16 sessions. HT, hormone therapy.

Table 3. Sociodemographic Variables of Binary and Nonbinary Clients at Monash Health Gender Clinic

	Binary ($n=171$)	Nonbinary ($n=40$)	p[a]
Age	23.3 [19.8, 30.2]	24.2 [21.2, 27.8]	$W=3343$, $p=0.946$
Geographical remoteness[b]	Major city: 90 (61.2%) Regional/remote: 57 (38.8%)	Major city: 29 (78.4%) Regional/remote: 8 (21.6%)	$\chi^2(1)=3.8$, $p=0.051$
Private health insurance	54 (32.5%)	16 (41.0%)	$\chi^2(1)=1.0$, $p=0.314$
Health care card	68 (49.6%)	20 (57.1%)	$\chi^2(1)=0.6$, $p=0.428$
Source of income[c]	Employed: 77 (45.0%) Government payments: 59 (34.5%) Other: 28 (16.4%)	Employed: 17 (42.5%) Government payments: 16 (40.0%) Other: 7 (17.5%)	Employed: $\chi^2(1)=0.1$, $p=0.772$ Handouts: $\chi^2(1)=0.4$, $p=0.513$
Legal relationship status	Single: 140 (82.8%) Married: 8 (4.7%) Previously legally partnered: 21 (12.4%)	Single: 37 (94.9%) Married: 2 (5.1%) Previously legally partnered: 0 (0%)	Single: OR = 3.8, $p=0.078$
Social relationship status	Single: 108 (65.9%) In a relationship: 56 (34.1%)	Single: 25 (64.1%) In a relationship: 14 (35.9%)	Single: $\chi^2(1)<0.1$, $p=0.836$
Living situation	Living alone: 21 (12.3%) Living with others: 134 (78.4%) Other: 11 (6.4%)	Living alone: 2 (5.0%) Living with others: 35 (87.5%) Other: 3 (7.5%)	Living alone: OR = 0.4, $p=0.262$
Currently smoking	31 (19.6%)	4 (11.4%)	OR = 1.9, $p=0.336$

Reported as median [IQR] or *n* (%). Not included in this table are Equinox clients (due to the scarcity of sociodemographic variables collected) and one MHGC client who was unable to articulate a gender identity.

[a]No comparisons were statistically significant after the Benjamini–Hochberg post hoc adjustment.

[b]Graded by postcode per the Australian Statistical Geography Standard Remoteness Structure 2016, in which RA1 is a major city, RA2 is an inner regional area, RA3 is an outer regional area, and RA4 is a remote area.

[c]Categories are not mutually exclusive (some clients had multiple answers).

WPATH and IC models. WPATH model clients had more psychiatric diagnoses and longer assessments for HT than IC model clients. There were a greater proportion of nonbinary clients accessing the IC model for HT than the WPATH model. Nonbinary clients had more psychiatric diagnoses and longer IC assessments, than binary transgender clients. Factors independently associated with psychiatric diagnoses included nonbinary identities, regional/remote residence, and socioeconomic disadvantage.

WPATH and IC model clients

Clients had similar sociodemographic characteristics between clinics. MHGC clients had significant socioeconomic disadvantage, including a greater proportion requiring government assistance than in the general Australian population (51% vs. ~33%).[23] A greater proportion of Equinox clients resided in a major city than MHGC clients, highlighting the lack of specialized PCP services in regional/remote areas.

Table 4. Mental Health Variables of Binary and Nonbinary Clients at Equinox and Monash Health Gender Clinic

	Binary ($n=357$)	Nonbinary ($n=107$)	p-value
Number of psychiatric diagnoses	1 [0, 2]	2 [1, 2]	$W=23494$, $p<0.001$[a]
Depression	149 (41.9%)	55 (52.4%)	$\chi^2(1)=3.6$, $p=0.056$
Anxiety disorder[b]	74 (43.3%)	24 (60.0%)	$\chi^2(1)=3.6$, $p=0.056$
Borderline personality disorder	22 (6.2%)	17 (16.2%)	$\chi^2(1)=10.5$, $p=0.001$[a]
Autism spectrum disorder	28 (7.9%)	9 (8.5%)	$\chi^2(1)<0.1$, $p=0.835$
Attention-deficit hyperactivity disorder	18 (5.1%)	10 (9.4%)	$\chi^2(1)=2.7$, $p=0.097$
Other psychiatric diagnosis[c]	32 (9.0%)	17 (16.2%)	Not compared
Number of psychotropic medications used	0 [0, 1] Mean: 0.34 (0.60)	0 [0, 1] Mean: 0.49 (0.68)	$W=21216$, $p=0.032$
Antidepressant	99 (27.8%)	36 (33.6%)	$\chi^2(1)=1.4$, $p=0.238$
Benzodiazepine	9 (2.5%)	5 (4.7%)	OR = 1.9, $p=0.329$
Other psychotropic medications[c]	13 (3.6%)	11 (10.3%)	Not compared

Reported as median [IQR], mean (SD), or *n* (%). Thirteen clients unable to articulate a gender identity are excluded from this table.

[a]Statistically significant after the Benjamini–Hochberg *post hoc* adjustment.

[b]Includes generalized anxiety disorder, social anxiety disorder, post-traumatic stress disorder, panic disorder, obsessive-compulsive disorder, and agoraphobia.

[c]Diagnoses and medications included under "other" had a prevalence of <5% at both Equinox and MHGC.

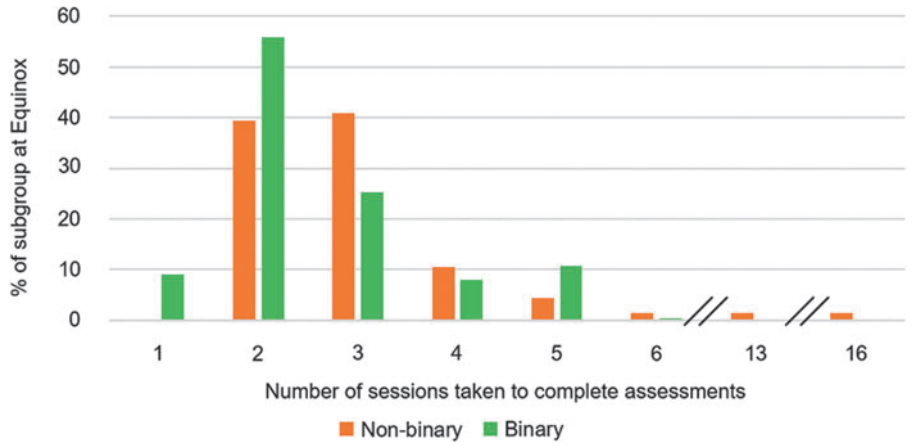

FIG. 3. Number of sessions taken to complete assessments for binary and nonbinary clients at Equinox.

Fewer clients (15%) identified as nonbinary at MHGC compared with Equinox, far fewer than the approximate third of transgender Australians with nonbinary identities.[25,29] This may be reflective of fewer nonbinary people desiring HT (as reported in Chew et al.),[30] or WPATH model clients feeling pressured to report a binary narrative (a phenomenon outlined in Cavanaugh et al.).[14]

Not unexpectedly,[4] prevalences of psychiatric diagnoses were high at both clinics. MHGC clients had marginally higher prevalence of psychiatric diagnoses and psychotropic medication use compared with Equinox clients. This higher prevalence may relate to greater diagnoses made by mental health clinicians during the WPATH assessment process, or to referral of clients with greater mental health needs to the WPATH model.[5,6,17,20,21,31,32]

As hypothesized, WPATH assessments for HT took more sessions than IC assessments. This is concordant with WPATH assessments exploring mental health comprehensively.[2,20] Clients' mental health needs are unlikely to have contributed to this observed difference, given mental health factors did not independently influence the length of WPATH assessments for HT. Alongside the high client satisfaction at Equinox and shorter waitlist compared with MHGC,[8,18] this finding supports the expansion of IC models to meet community demand.[5,11]

Consistent with previous studies, nonprescribed hormone use was disclosed predominantly by trans women,[33–35] potentially explained by trans women receiving less pre-HT social acceptance than trans men, and estrogens being easier to obtain than testosterone.[33] Nonbinary clients did not disclose nonprescribed hormone use, consistent with their low rates of desiring HT.[30]

Nonbinary clients

Nonbinary clients had more psychiatric diagnoses and BPD diagnoses than binary clients. This was consistent

Table 5. Linear Regression Model Investigating Sociodemographic Associations with the Number of Psychiatric Diagnoses

Predictors	β coefficient (95% CI)	Standard error of β coefficient	*T* value	*p*
Log (age)	−0.249 (−0.717 to 0.219)	0.237	−1.052	0.294
Nonbinary identity	0.686 (0.274 to 1.098)	0.208	3.292	0.001*
Health care card	0.427 (0.078 to 0.775)	0.176	2.418	0.017*
Single (social relationship status)	−0.171 (−0.510 to 0.169)	0.172	−0.995	0.322
Employed	−0.326 (−0.676 to 0.024)	0.177	−1.843	0.067
Regional/remote	0.182 (−0.166 to 0.527)	0.175	1.030	0.305

$n = 150$ MHGC clients were included in this model, which had residual standard error of 1.012 (on 143 degrees of freedom), multiple and adjusted R^2 of 0.174 and 0.139, respectively, and an *F*-statistic of 5.004 ($p < 0.001$).

*$p < 0.05$.

CI, confidence interval.

Table 6. Logistic Regression Models Investigating Sociodemographic Associations with a Depression or Anxiety Disorder Diagnosis

Predictors	Diagnosis of depression[a]	*p*	Diagnosis of an anxiety disorder[a]	p
Log (age)	[b]	—	0.448 (0.180, 1.064)	0.075
AFAB	[b]	—	0.659 (0.330, 1.288)	0.228
Nonbinary identity	[b]	—	2.833 (1.273, 6.510)	0.012*
Employed	0.744 (0.408, 1.351)	0.332	0.463 (0.245, 0.860)	0.016*
Regional/remote	2.229 (1.208, 4.165)	0.011*	1.738 (0.912, 3.343)	0.094

$n = 185$ MHGC clients were included in both models. Residual deviance 247.15 (on 182 degrees of freedom) for depression diagnosis model, and 234.58 (on 179 degrees of freedom) for anxiety disorder diagnosis model. Although shown in this table together, models were run independently of each other.

[a]Reported as adjusted OR (95% CI).

[b]Not included as a predictor in this model.

*$p < 0.05$.

with the cohort in Cheung et al.,[10] and could reflect nonbinary people experiencing greater harassment, isolation, and minority stress,[36,37] while experiencing less acceptance and belonging within TGDNB communities compared with binary transgender people.[38] The poorer mental health of nonbinary people may also reflect their lower rates of accessing mental health services,[36] with considerably fewer reporting being "easily able" to access inclusive gender-affirming care than binary transgender people (26% vs. 50%).[39]

Nonbinary people comprised a greater proportion of clients approved for HT at Equinox than MHGC (consistent with previous studies),[4,8,10,16,21,35] suggesting that nonbinary people may be preferentially accessing HT through IC models. This could be because nonbinary clients have historically experienced excessive gatekeeping in the WPATH model, since they lack a stereotypical binary transgender narrative.[3,13,14] In contrast, IC models emphasizing clients' lived experience may be more accommodating to nonbinary identities.[14,40]

An additional finding was IC assessments being longer for nonbinary clients than for binary transgender clients, potentially explained by their greater psychiatric diagnoses (requiring more sessions),[20] or requests for atypical HT regimens.[9,12] These factors were irrelevant to the WPATH model, which refers to an endocrinologist to prescribe HT.[2,41] Our findings suggest that more should be done to accommodate nonbinary clients' needs, especially in the WPATH model.

Factors associated with psychiatric diagnoses/longer assessments for HT

Psychiatric diagnoses were closely associated with socioeconomic factors. The number of psychiatric diagnoses was independently associated with being nonbinary or having a health care card, suggesting that observed differences between nonbinary and binary transgender clients were not due to confounding factors. The psychiatric comorbidities experienced by many nonbinary individuals are likely to be multifactorial, reflecting gender-based stigma and discrimination experienced within transgender communities,[38] across broader society,[39] and in the health system.[5,10]

Depression diagnoses were independently associated with regional/remote residence; this is explained by regional/remote Australians in the general population experiencing a high mental health burden,[42] coupled with TGDNB people in regional/remote Australia experiencing significant transphobia and isolation from other TGDNB people.[29,43]

This finding supports the expansion of TGDNB health services into regional/remote areas,[11,43–45] which has begun in recent years with support from the local government.[5] Anxiety disorder diagnoses were associated with being nonbinary and unemployed; the former association was consistent with previous studies,[10,11,35] while the latter may relate to the stresses in seeking work, including transphobia from potential employers.[29,39] Together, these findings reinforce the importance of social workers providing affordable and accessible care attuned to TGDNB clients' social needs.[18]

We hypothesized that longer assessments for HT would be driven by socioeconomic disadvantages and mental health factors. However, no predictor variables remained in the regression model of MHGC clients. This could be because WPATH assessments are highly standardized,[2] or because longer assessments are driven by other factors (e.g., lack of family support[45] or clinician-side factors), which deserve exploration in future studies.

Limitations

Strengths included an identical time frame across sites and moderately sized samples. Limitations included the retrospective study design (obscuring causal relationships between variables); clients not being randomized to WPATH or IC models; potential overlap between WPATH and IC model clients; and no data collected regarding reasons for referral, client satisfaction, or health outcomes. In addition, collection of variables was nonuniform, processes for detecting psychiatric diagnoses differed between clinics, and only the presence (not severity) of psychiatric diagnoses was recorded.

Conclusion

As demand for gender-affirming health care continues to grow, there is a need to coordinate WPATH and IC models to provide the least burdensome care to the TGDNB community. Our study provides insights into how these models are currently utilized. A central point of intake may be beneficial to ensure greater coordination of care between services, directing people who may benefit from more comprehensive mental health assessments to the WPATH model.

We foresee three future directions: studies exploring longitudinal health outcomes in the two models of care; studies exploring how the two models of care interact (e.g., in referral patterns), and how they could be optimally coordinated within or across clinics; and qualitative studies characterizing how those with "complex health needs" are identified and managed by clinicians. Such studies could help develop triage-styled advice for suggesting appropriate models of care to those seeking HT.[5] Health care providers should continue to listen to the needs of TGDNB individuals, refer between models as clinically appropriate, and tailor approaches as new evidence emerges.

Authors' Contributions

P.S. contributed to conceptualization, data collection and analysis, writing and editing; D.C.-C. performed conceptualization, data collection and interpretation, editing and reviewing; C.B. contributed to conceptualization, data interpretation, editing, and reviewing; P.L. performed conceptualization, data interpretation, and reviewing; A.S.C. contributed to conceptualization, data interpretation, and reviewing; C.S. contributed to data collection and reviewing; J.G. contributed to data collection and reviewing; J.E. contributed to conceptualization, data interpretation, and reviewing; R.L. contributed to conceptualization, data interpretation, editing, and reviewing.

Acknowledgments

We thank the consumer advisory panels at MHGC and Thorne Harbour Health for their endorsement and suggestions on our study, and Ms. Justyna Cyza for her assistance in editing our article.

Author Disclosure Statement

J.E. is the head of MHGC. R.L. and D.C.-C. are researchers at MHGC. P.L. is the manager of Equinox Gender Diverse Health Centre. Other authors have no interests to disclose.

Funding Information

A.S.C. is supported by an Australian Government National Health and Medical Research Council Early Career Fellowship (no. 1143333).

Supplementary Material

Supplementary Appendix SA1
Supplementary Appendix SA2
Supplementary Appendix SA3

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Cite this article as: Solanki P, Colon-Cabrera D, Barton C, Locke P, Cheung AS, Spanos C, Grace J, Erasmus J, Lane R (2023) Gender-affirming hormone therapy for the trans, gender diverse and non-binary community: coordinating World Professional Association for Transgender Health and informed consent models of care, *Transgender Health* 8:2, 137–148, DOI: 10.1089/trgh.2021.0069.

Abbreviations Used

AFAB = assigned female at birth
AMAB = assigned male at birth
BPD = borderline personality disorder
CI = confidence interval
HT = hormone therapy
IC = informed consent
IQR = interquartile range
MHGC = Monash Health Gender Clinic
ND = no data
OR = odds ratio
PCPs = primary care physicians
SD = standard deviation
TGDNB = trans, gender diverse, and nonbinary
WPATH = World Professional Association for Transgender Health